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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/056,634	01/23/2002	Sayed A. Mir	DP-301063 / DE3-0124-D	1017 /
23413	7590	10/09/2003		
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002				
EXAMINER LAIR, DONALD M				
ART UNIT		PAPER NUMBER		
2858				

DATE MAILED: 10/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/056,634

Applicant(s)

MIR ET AL.

Examiner

Donald M. Lair

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6-10,12,14-19,21,23-27,29 and 31-33 is/are rejected.
- 7) ☒ Claim(s) 3,5,11,13,20,22,28 and 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Amendment A, filed 09/05/03, with respect to the rejection(s) of claim(s) 1, 2, 4, 6-10, 12, 14-19, 21, 23-27, 29, and 31-33 under C §102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Naidu (US-6,362,586) and also Naidu in view of Su (US-6,577,087).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 4, 6, 8, 9, 10, 12, 14, 16, 17-19, 21, 23, 25-27, 29, 31 and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Naidu (US-6,362,586).

4. In regards to Claims 1, 9, 18 and 26, Naidu discloses a method of determining a current in an electric machine coupled to a polyphase bus, the method comprising

detecting a rotational position of the electric machine with a position encoder coupled to the electric machine (Column 1, lines 39 – 64);

controlling an inverter comprising a plurality of switching devices, the inverter having an input coupled to a direct current bus, and an output coupled to the polyphase bus, the inverter

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responsive to commands from a controller coupled to the inverter and to the position encode (Column 1, lines 47 – 57);

measuring a current from the direct current bus (Column 2 lines 21 – 33); and

capturing the current at a predefined interval of time (Column 2, lines 31 – 36; Column 4, lines 34 – 47).

5. In regards to Claims 2, 10, 19 and 27, Naidu discloses the method described above further comprising determining a set of values representative of a magnitude of currents on each phase of the polyphase bus (Column 1, lines 47 – 57)

6. In regards to Claims 4, 12, 21 and 29, Naidu discloses the method described above further comprising determining a value representative of a torque current from the current (Abstract; Fig. 2, element 102; Column 8, lines 16 – 46).

7. In regards to Claims 6, 14, 23 and 31, Naidu discloses the method described above wherein the electric machine comprises a permanent magnetic motor and the position encoder includes a rotor position sensor (Column 4, lines 20 – 22).

8. In regards to Claims 8, 17, 25 and 33, Naidu discloses the method described above wherein the capturing is characterized by sampling a signal value representative of the current and the sampling is controlled by the controller to be operative only at the predefined interval of time (Column 2, lines 31 – 36; Column 4, lines 34 – 47).

9. In regards to Claim 16, Naidu discloses the system described above wherein the inverter is comprised of switching devices coupled to and responsive to commands from the controller (Column 1, line 58 – Column 2, line 11).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 7, 15, 24 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naidu.

12. In regards to Claims 7, 15, 24 and 32, Naidu discloses the method of Claim 1 wherein the electric machine is a permanent magnet motor characterized by a sinusoidal magnetic field excitation (Column 3, lines 50 – 67). The reference fails to teach using a DC brushless motor; however, Naidu does teach using a permanent magnet, synchronous, alternating-current motor.

13. Su (US-6,557,087) discloses a control system for motors that is used on multiple types of motors, including brushless DC motors and synchronous AC motors (Column 1, lines 8 – 52). Accordingly, it would have been obvious to one of ordinary skill in that art at the time of the invention to modify the control system disclosed by Naidu by using it to control a DC brushless motor as disclosed by Su, for the purpose of implementing a low cost drive system (Column 1, lines 26 – 33).

Allowable Subject Matter

14. Claims 3, 5, 11, 13, 29, 22, 28 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter:

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16. In regards to Claims 3, 11, 20, and 28, the prior art of record does not suggest a reasonable motivation for establishing an interval of time when the following conditions are true: an electric machine is within a predefined rotational angle, a predefined combination of the switching devices are active, and an angle between a phase voltage and a corresponding phase current on each phase of the polyphase bus being within a range of about minus thirty to about thirty degrees.

17. In regards to Claims 5, 13, 22, and 30, the prior art of record does not suggest a reasonable motivation for establishing an interval of time when the following conditions are true: a particular back EMF voltage waveform for a given phase of the electric machine attains its peak value, the electric machine is within a predefined rotational angle, a predefined combination of the switching devices are active, and an angle between a phase voltage and a corresponding back EMF on each phase of the polyphase bus being within a range of about minus thirty to about thirty degrees.


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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald M. Lair whose telephone number is (703) 305-4450. The examiner can normally be reached on Monday - Friday, 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on (703) 308-0750. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1436.


Donald M. Lair
Patent Examiner
Art Unit 2858
October 7, 2003


N. Le
Supervisory Patent Examiner
Technology Center 2800